Implementing a World Emergency Alert System Program

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In North America is an emergency alert system (EAS) which is the only system that alerts the general public by immediate or slightly delayed broadcasts on all radio and TV stations. A familiarity with this system is assumed of the reader, otherwise read EASINTRO for a background. This system can be effectively adopted worldwide with some improvements as noted below.

TERMINOLOGY; The Project Management Institute is in process of defining the standard definition of a program. In the interim I shall use the dictionary definition. This is more than a project because:-

1) Especially in the later implementation phase, there will be many projects with their own approval, budget, etc to implement this World Emergency Alert System.
2) There are multiple, rather independent, deliverables. They only depend on the implementation of the national plans for deployment. A project has normally one deliverable or a batch of similar deliverables.
3) This involves a large amount of standards development in engineering standards committees. It is rare that any project requires any development of a standard.

SCOPE STATEMENT ----------

CATEGORY CODING; The categories of emergencies and messages are very comprehensive. The only improvement I can suggest is to give lahars, dam failures and sliding bogs the same code as flash floods.

REGIONAL CODING; EAS uses a two digit regional code, which is adequate for North America and counties/provinces are another three. The worldwide coding can be configured with eight digits, based on the ITU country code assignment as the beginning. As North America is country code 1, this would be followed by the present PSSCCC 6 digit code. The final digits would be zero meaning the whole region. Other values could be used to select sub regions. Another example is 61xxxxxx, where 61 means Australia and the xxxxxx is the region code that country selects, including offshore areas. Some governments may derive their regional coding system from the zip or postcode system. This has the advantage that regular users usually know their zip/postcode, and when configuring their equipment can enter this. As some postcode systems are alphanumeric, this should be provided for in the user interface and format definitions. The final digits zero meaning a region broadcast may require some tweaking of the coding system e.g. using last digits ZZ if 00 is a zip/postcode number assigned. If ZZ is assigned, then perhaps 99 is not. That aspect of implementation needs further research, and the original design may be adequate.

STANDARDIZATION PROCESS; The ITU (International Telecommunications Union) is the relevant standardization body for this type of system. If the UN passes a resolution directing the ITU and other relevant bodies to proceed with this, that will expedite the process. However there are a few areas in which the present EAS system can be expanded, and that can be included at the same time. They are as follows.

INTERNET; The IETF (Internet Engineering Task Force) is the relevant standardization body here. It seems appropriate for two port numbers to be reserved for this protocol. High ones appear preferable. E.g. 64k -16. One port is for the data, last bit zero, and the other for the audio, last bit 1. A full RFP needs to be developed, but at present the approach to consider is that ISPs will broadcast WEAS messages to their local customers and themselves if local. The WEAS messages will be derived from the WEAS network, not the Internet. Also all routers should be hard or default coded to prevent messages of WEAS to be transmitted to or received from the general Internet, probably based on this port number. This will prevent hacking and minimize unnecessary Internet traffic. Routers typically have a CON (console) DE9F RS232 port that would be fine for the data. This port is rarely used at present. Audio could be input via a phone jack but that would give it a 7 or 8 bit telecomm data format sampled at 8 kHz. This will not sound so great on a Hi-Fi. Two alternative inputs would be an XLR-F or screw terminal analog balanced with a reference level of +4 dBu (dBm unterminated) or a 75 ohm terminated BNC as an AES/EBU audio of 16 bits sampled at 48 kHz. As AES-EBU is stereo, the audio shall be carried identically on both channels. These two will sound quite satisfactory on a Hi-Fi.

Then it is up to software vendors to take these messages received, which may include audio, and immediately bring it up to the users. Some applications may need to suppress this, e.g. newsroom computers, military, civil defense and some others. The default for the crawl is to be on top, and users may decide to move something over the top of it. This may be acceptable for more routine messages, but those with a Do-Not-Disturb-Override code shall always be on top. The EAS audio shall override the normal computer audio, and the volume shall not be reduced with a Do-Not-Disturb-Override code. The reception of a Do-Not-Disturb-Override code shall cause activation of a device that is in a power save mode so as to reproduce the data and audio, perhaps also operate external alarms by some defined means.

DIGITAL CELLPHONES; These can receive messages, and WEAS messages should be included. Whether this is based on distribution from the cell site or the Internet connection has yet to be determined. Messaging pagers can be similarly approached. The CATS (City Alert Texting System) developed in the U.K. can be a relevant basis for this component. It is based on SMS (Short Message Service) a variant of email. If all of the capabilities of the CAP and WEAS proposal can be provided for by SMS, then the most appropriate solution may be a gateway between the two systems. A suitable addressing scheme needs provision, and other capabilities such as Do-Not-Disturb-Override for some message categories such as tsunami and lahars need provision.

MESSAGE WIDECASTING; In the U.K. the CATS system is used sometimes with a telephone message distribution system by BT. The CATS message refers to a telephone number for more details. The BT (formerly British Telecom) system gives out messages to people at the rate of a million messages an hour. Ordinarily such methods are ineffective because of the congestion that would result on the telephone network. I have investigated previously such unconventional approaches to telephone usage, and this sort of method can only be used if all the traffic were terminated in a distributed manner in local exchanges. Otherwise normal or emergency phone traffic would be disrupted. This is not true broadcasting so I am calling it widecasting. As I do not have the technical details from BT, I also may need to change the name. I am not aware of such a system being used elsewhere. This may be a useful complementary technology to consider.

ANALOG AND DIGITAL PHONES; The phone system is not at all configured for broadcast functions. However it is possible for WEAS messages to substitute for dial tone, and perhaps ringing tone, perhaps with the added note to avoid use of the phone system if possible

While there may be a place for this in SS7, the results could be achieved by telephone exchanges receiving and inserting WEAS signals locally. The questions remain as to how to reach business phones and whether this can be an extension to the caller ID system. If possible, it appears desirable for the Central Office or Local Exchange to use T1 or E1 lines (or faster) to transmit EAS data and voice to PBX systems. This may be fed to speakerphones, the PA system, and display messages on phone displays. As I am not certain that it is feasible, this requires further research and it is not at present included in the Work Breakdown Structure.

DBS e.g. DirecTV, Echostar and Sky; As these cover whole countries, or multiple countries, a low data rate can be allocated and the STB (set top box) can decode this and relevant messages displayed and made into audio. The details of this can be made by the companies, or use a relevant standard from SMPTE-EBU. The various countries would have to transmit their data and voice to the uplink.

VIDEO COMPRESSION; The DBS systems use this technology. It may be MPEG-2 (also known as DVB), DC2, MPEG-4+H.264, and VC1. All these systems can transmit EAS data, but only the latter start to incorporate means to present it with set top boxes. So standardization work is needed here. As MPEG-4 and VC1 are becoming more implemented, there is an economic incentive to move to these from MPEG-2. For example broadcasters will be able to transmit two HD channels or one HD and two SD (PAL or NTSC equivalent) channels from their transmitters.

However this requires compatible set top boxes. As the analog shut-off is now decided as being in 2009, this is a reasonable time frame for this to be a conversion from analog to MPEG-4+H.264 or VC1 rather than to MPEG-2. However the way to incorporate EAS messages should be considered in an intelligent manner, appropriate to these newer compression technologies. SMPTE and ITU are the appropriate standardization organizations for this

CABLE TV: This is going through a transition from analog to digital also. The implementation of EAS here would benefit from the compression standardization previously mentioned. Then EAS messages would appear as a crawl over the program instead of switching the video to the EAS message only. That is a more elegant and viewer acceptable method. Cable TV and phone companies are also starting to compete with the phone companies offering fiber to the premises that include perhaps 500 TV channels, faster internet than cable modem, as well as phone service. Cablelabs is the standardization organization who produced the DOCSIS standard used worldwide.

LIPSYNC; Amongst other sources, video compression systems are liable to introduce lipsync errors. This is that the sound is not delivered at the same time as the corresponding video. This is a problem for viewers. While in itself, this is outside the scope of this subject, it is an additional limitation to WEAS of existing video compression systems. MPEG2, DC2, MPEG4/H.264 and VC1 are all relevant systems. It may be advantageous to the implementation of this proposed standard in these systems to combine efforts with the effort to implement solutions to the lipsync problem. As I am on the Compression Committee of SMPTE, this relates to both of these problems.

XM or satellite radio; This has multiple audio channels on one satellite transponder. More than one may be used, but the situation is similar to DBS and can be handled as such.

MARINE; The maritime situation is covered by the Global Maritime Distress and Safety System (GMDSS) which interfaces to EAS as it presently exists. This interface needs to be maintained with the new system. Also INMARSAT has phones and data channels which could be included as there are many users on land.

LARGE GATHERINGS; The use of EAS in large facilities holding over 2000 people (e.g. stadiums or cineplexes of more than three screens) is an aspect to consider. These can be fully automated for "not to be disturbed" category messages. See sleeping people below. Cineplexes may have only one projectionist, so manual operation is not desirable.

AM & FM RADIO; These broadcast media are starting as a new digital format called DAB (Digital Audio Broadcast). In the U.S. this is called HD radio. A variation of this is becoming adopted for shortwave called DRM (Digital Radio Mondiale). This means that the digital codes can be processed by the microprocessor without requiring a modem. That is an additional cost and power consumption. This point is increasingly applicable to other implementations also. The modem tones presently used will become redundant and a unique form of alert to humans as the actual data transmission is kept digital. These radios will usually have a small display and the EAS message text can be displayed there.

LANGUAGE ASPECTS; The code language is XML, a successor to HTML. This supports Unicode, which includes all alphabets. The messages can be in the local language (if not English), followed by English for the benefit of non-locals. One exception would be Switzerland, which may have their three languages followed by English. As the present EAS system is 7 bit ASCII, which does not support Unicode, this needs to be replaced with the 8 bit ASCII, perhaps in the U.S. also at some future time.

In the U.S., the multilingual aspect has become apparent as a result of Katrina when many Spanish only speaking people were deprived of EAS information as the Hispanic broadcaster was off the air. So English messages should be followed by Spanish messages for English broadcasters and others for priority messages. Also when other languages are being aired e.g. Italian programming, then it would be desirable if those languages could be used in the EAS messages. This might be feasible by having the automation system send commands to the EAS subsystem.

SENSOR INPUTS; This can be taken from whatever is determined to be suitable and translated to XML messages. This may be from county, city, state, national governments or regional organizations e.g. for ocean monitoring.

FUNCTIONS; The present EAS system is not only for warnings, watches and emergencies. It also conveys weather information. The NOAA coding system is compatible with EAS. The metric system needs to be adopted. Also AMBER alerts can convey messages about kidnapped children. Such messages can be displayed on intelligent highway signs.

NOAA; The National Oceanic and Atmospheric Administration of the U.S. is implementing various global sensor systems. One is the ocean bottom sensors that can detect tsunamis. These sensor systems together form GEOSS which is the Global Earth Observation System of Systems and whose data would be available for weather and disaster management administrations of national governments. This is complementary to the WEAS system proposed here.
AGRICULTURE; Agricultural emergencies can occur such as foot and mouth disease, which are severely infectious and incurable. These can trigger a paramilitary form of response. So such emergency messages need to be conveyed.

SLEEPING PEOPLE; There are already radios and TVs that can switch on when an EAS message is received. However they are uncommon. In part this is because most consumer radios and TVs are made or designed in Asia. They consider a worldwide market and at present EAS is not worldwide. However a part of the receiver must be active to receive the signal. This consumes some power, though newer electronics is more energy efficient. So with some education, this can be a matter for the public to decide according to their location and preferences. If funds are available, it may be of value to assist the development of ICs that can decode EAS and turn on alarm clock radios in the event of a Do-Not-Disturb-Override code.

While there can be ascertained which codes are could be assigned to awaken people or interrupt their activities, there is no code yet assigned to override a do not disturb setting. This needs consideration, and also cautious usage to avoid public criticism.

EARTHQUAKE DAMAGE MITIGATION; This system is not a substitute for seismic building codes (such as in California, Japan & New Zealand), education of the public, and suitable emergency management preparations. At present earthquake prediction technology needs to improve considerably before it becomes suitable for an emergency alarm system. It is currently most suitable for news and background educational information. Nonetheless there may be improvements in these methods which could yield much more accurate results close to the time of a seismic event. At such time the availability of a rapid response alert system can be a rationale for widespread deployment of these technologies.

Currently, seismic events are first detected when the shock waves reach ground level above the epicenter. Whether some electromagnetic pulse is generated with a signature that can enable earlier detection is not presently known. Then the shock waves propagate to reach locations further away at a high velocity. Observers have seen this as waves travelling across the ground. If there is an adequate distribution of seismographs and an electronic, rapid transmission system to emergency management, these messages could automatically trigger EAS messages without the delay of human intervention. This could be a few seconds. Then people away from the epicenter ground level could receive a warning which may precede the shock by seconds or more. This may be an adequate time to take damage mitigation measures such as leave a brick building or slow a train. The Japanese warning system reportedly has a propagation time of perhaps five minutes. This indicates that there is a significant amount of human decision making in the path. This limitation may be a basis for Japan to consider migrating to the World Emergency Alert System proposed here. At the same time, there can be benefits from dissemination of the Japanese experience.

Some animals are sensitive to infrasonic sounds. These are also too high to reproduce well on a seismograph. Such animals have been observed to respond before seismic events occurred, perhaps tsunamis also. This is worth researching as it may provide another early warning method that can be used with EAS.

ROUTING MECHANISM; With the CAP protocol it is possible to electronically route the messages and generate alerts in response to sensor inputs. In the event of high priority events being detected e.g. earthquake or nearby tsunami, the alerts can be distributed automatically. Depending on an operator adds undesirable time to the alert transmission. The operator should check all such alerts and issue a false alarm notice if this is justifiable. More regular messages can await operator approval. In a radio or TV station, messages are normally transmitted at an opportune moment e.g. not during advertising. High priority messages however should be transmitted immediately. This is rather different from Internet routing.

OVERRIDE MECHANISM; In addition to the do-not-disturb-override previous, the mechanism needs adaption. In a broadcast environment, valid messages can generate a crawl on the video either automatically or by being triggered by a master control operator. The audio override is usually accomplished by a DC voltage operating a relay or logic switch to replace program with the EAS audio. This is dependent on the equipment manufacturer, and is accomplished before being sent to the transmitter.

In the DBS and satellite radio application, this needs to be done at the receiver. This is part of the reason why a standards development process is required. Receivers installed at fixed locations need to have the zip/postcode entered by the user. It may be possible to extract a default value from the authorization code, but that needs further research as I do not know if this is applicable to all authorization code systems. If this is so, it is included from the users' post/zipcode data when their receiver is being authorized. Satellite radio and RVs with DBS are an additional complication because they are mobile. If GPS location data is available, a latitude and longitude to post/zipcode lookup table appears to be a possible mechanism to provide for this. An unsuccessful lookup can generate an error message. Satellite radio and perhaps DBS also can transmit the latitude, longitude and radius to be covered, doing any lookup prior to transmission.

In internet connected computer networks, the addressing can be by post/zipcode. However as computers can be moved, an additional message specifying which post/zipcodes are in the EAS message area served. This message should also specify which is the local post/zipcode if the network configuration permits this, e.g. a single airport or hotel. This also applies for wireless LAN methods and wireless internet. It is inconvenient and liable to errors if the users are to be expected to enter the post/zipcode.

As there is no cable with DC, a voice override method is required. The best approach seems to be to have an override message transmitted amongst the data. Rather than an on or off command which may be missed in transmission, an override audio command is desirable. This could be repeated every 0.2 +/- 0.05 seconds and be effective for 0.5 +/- 0.05 seconds. This command shall be repeated for the duration of the audio message and begin 0.25 seconds before the beginning of the audio. So the omission of one will have no effect and the omission of two will have a maximum dropout of about 0.1 sec. The format of this message has yet to be decided.

HOME THEATER AND MORE COMPLEX CONSUMER ENTERTAINMENT;
These installations have at least one internet or cable TV or DBS connection normally. So it would be possible to extract the WEAS data and audio from at least one and display it over whatever local source is playing. This might be DVD, DVC or hard disk playback (e.g. Tivo). I am not including VHS as this is analog and is being phased out. All of these digital systems have MPEG-2 or DV decompression that operates on blocks. It would not be particularly difficult to have some rows of blocks replaced with a WEAS crawl. The audio could be likewise overridden. The implementation of this should be coordinated with consumer electronics manufacturers as these products are very price sensitive. However to back up the implementation, legislation can be adopted. As auxiliary data can be transmitted using this system, which may be used in some countries for stock tickers, weather, etc., the default should be that this data is not displayed by may be selected by a menu.

ENVIRONMENTAL IMPACT; As this approach is using mostly existing consumer electronics, the environmental impact of this additional function is negligible. One exception to this would be mainly home theater systems where additional software and perhaps some hardware would be needed. This would be an additional feature of future equipment. The other exception would be EAS equipped alarm clock radios that would have some additional hardware and software.

The common equipment dedicated would be additional electronics. This will consume power and when eventually scrapped, will add to the garbage/recycling volume. In order to minimize the environmental impact there, all equipment should be designed and built according to the RoHS (Restriction of Hazardous Substances) and WEEE (Waste Electrical and Electronic Equipment) directives of the E.U. While this legislation is not necessarily applicable elsewhere, it is better for the environment to implement this and it makes for equipment designs that are usable worldwide. The latter point also applies to usage of ISO metric preferred screws and other such standards

ERROR CORRECTION; DVB and Navtex (part of GMDSS) have FEC (Forward Error Correction). This needs to be incorporated in a suitable manner also with enough delay so noise bursts and minor transmission dropouts (e.g. driving under a bridge) will have no effect. This is applicable to satellite methods such as DBS and XM radio. This can be accomplished by repeating the message with the same message number. Computer network and cellphone systems can have IPv4 or IPv6 based retransmission request protocol of packets with errors.

FIRE ALARMS; A dry contact with normally closed as the default can be provided from building fire alarm systems into building distributions e.g. internet, DBS as often used by hotels, cable TV and perhaps PBX dial/ringing tone override. Some PBX systems have paging so this is another possibility. This is not intended to replace fire alarm systems as required by building codes, but rather to augment them.

CLOSED CAPTIONING; The original captioning system on line 21 for NTSC TV is now being supplemented by a digital standard which is more flexible. At present I have no information on whether this standard or another is being adopted in the international (PAL/SECAM) areas. As WEAS may be selected by location in some applications, the original method of using a cable in the TV station to move the captioning to the top of the screen when EAS messages are transmitted, no longer applies. This functionality would have to be implemented in the set top box to either add the captioning correctly there or to convey the position shift to the TV or video monitor.

REDUNDANY; As this proposal is to communicate by multiple methods, if one channel should fail, the others will provide some level of redundancy. Also, if one channel is compromised to transmit unauthorized messages, the population will note that other channels are not carrying the message and be less inclined to panic unnecessarily, suspecting a false alarm. The redundant architecture should be implemented in the Emergency Management core also. This also applies to sensor systems. The present EAS system is redundant in its core. In terms of emergency communications, there are also significant private networks, an example of which is that of the Church of Jesus Christ of Latter Day Saints (Mormons) who can reach their world membership within 24 hours with a combination of email, phone trees and foot travel. Another is that of the radio hams RACES. Emergency Managers are aware of these networks and they both provide redundancy and add bandwidth.

QUALITY MONITORING; While the goal of six sigma is to design and produce the quality of delivery such that testing is not necessary to provide the quality. Nonetheless in reality it has occurred that inexperienced and unqualified staff, beyond equipment failures has disconnected EAS equipment. So a means of automated monitoring is desirable, preferably with some

redundancy. It should not be difficult to develop software to work with multiple radio and TV receivers and cellphones and internet so messages can be sent via internet to central monitoring. This can provide monitoring of required weekly and monthly tests as well as message distribution. This will provide statistics beyond human monitoring at multiple points.

As computers will be able to transmit monitoring packets, this will considerably automate the monitoring process via the internet. Some computers can have cellphone reception and TV reception so monitoring messages can be for all distribution systems. Errors or dropped packets of monitoring messages can be accomplished via TCP/IP. All monitoring computers or devices should have an IPv6 address. This address should be included in the monitoring packet format for identification even if the packets are traversing an IPv4 network. In order to facilitate the deployment of this addressing it may be preferable to capture the data pertinent to the IPv6 address during sales, and assign the number to the equipment as it is passing through the test and configuration stage before shipping. This address can be put on the shipping carton to ensure deployment at the correct location. While this adds to the production cost, most of this can be automated which is preferable to the labor intensive method of doing this at the time of installation. Unassigned address equipment should have an initial address of all zeros.

LEGISLATION; This can be based on existing legislation with extensions for coding, internet, phones and language. The FCC EAS Rules are the most relevant legislation. That all signals and data paths that have EAS equipment installed must be accurately documented is another legislation item. That messages must be printed to provide evidence of correct operation may be another item. All the staff and contractors working on this program should be granted immunity from legal suits which may be made on behalf of disaster victims during and following this program provided they are meeting their planned implementation time plus a reasonable safety margin.

US SUPPORT; As this is a system developed in the U.S., support of this project by the U.S. government is essential, so there should be suitable co-operation.

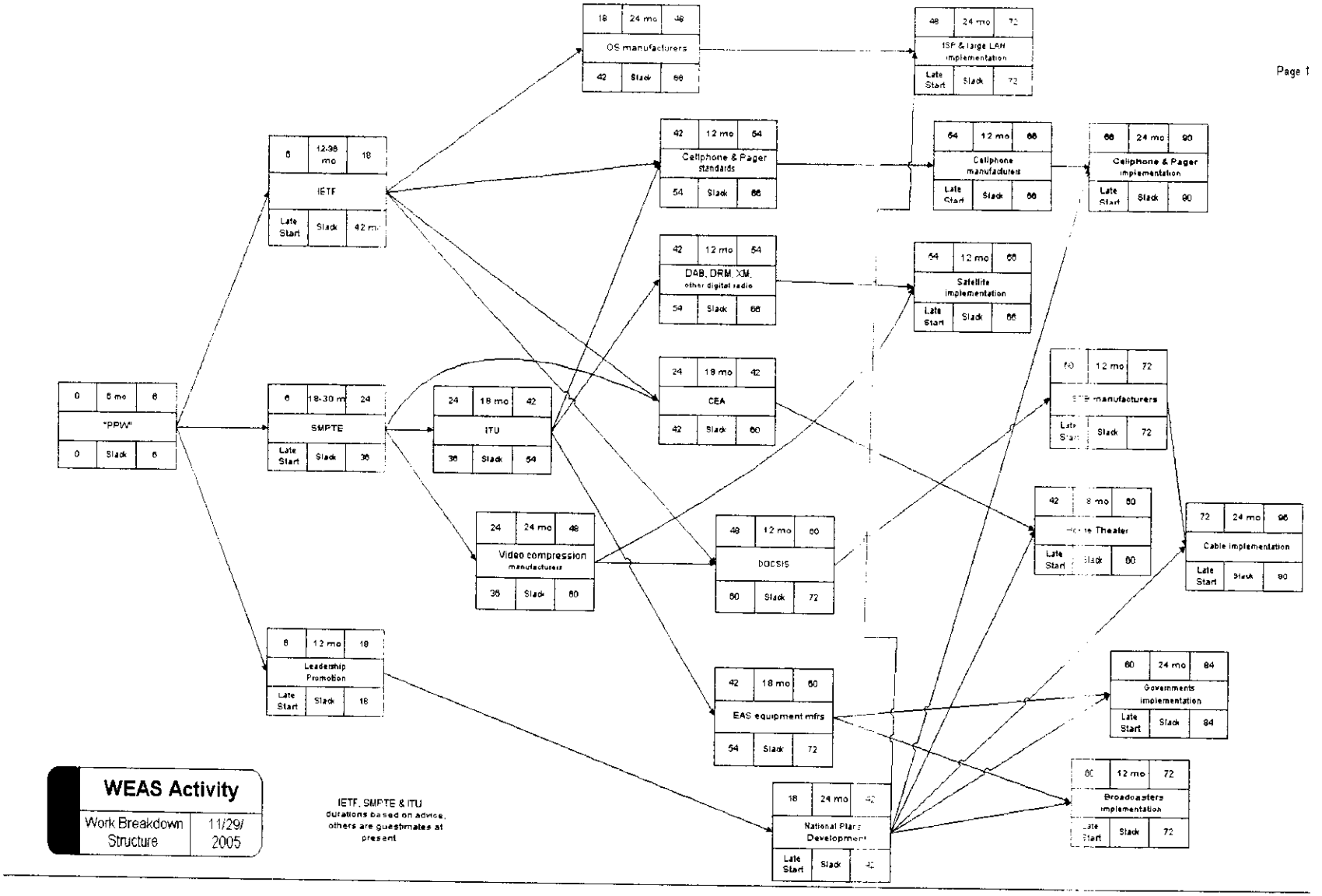
FINANCE: As an example, the equipment for a radio or TV station is $US4840 analog or $US6460 digital with TV stations also needing a dedicated character generator and keyer to insert the crawl. The installation and maintenance at the radio or TV station is done by their engineers. This is not a significant expense for a country. The cost of the sensor and transmission system can vary widely and that depends on what needs monitoring. However having the valuable use for this monitoring adds to the value of that data, and this makes a better sensor and transmission implementation more justifiable. Standardization and the economics of scale encouraging competition will drive prices down. Also this will be a digital system as much as possible, which is a very economical technology. The effort to have the standards defined in an acceptable form would take a significant amount of time and reasonable budget.

NATIONAL PLANS; Just as states in the U.S. develop their own detailed plans, so it would be appropriate for nations (or states/provinces for large nations) to develop theirs. A category template could be useful for this development and for checking that there was adequate development of the plan and implementation checking by international experts. As the plan developed by each nation is part of the security infrastructure of that nation, then a possible

mechanism for review is for the international expert or experts to do so for the English language version as written on paper, in a room with no recording devices, in the presence of a representative of the national EMO or CD organization. The recommendations shall be written in the same room and the only additional document to be removed from that room by the international expert or experts is a copy of the recommendations. It is conceivable that the international expert(s) could be a target for terrorists or enemy governments, so the possession of national security secrets is not desirable and should not be necessary.

PROJECT ACTIVITY NETWORK DIAGRAM ----------

This is in a separate Visio file, WEAS-sched. This should be the next page.


Page 1
"PPW"
IETF
SMPTE
ITU
Leadership Promotion
OS manufacturers
Cellphone & Pager standards
DAB, DRM, XM, other digital radio
CEA
Video compression manufacturers
DOCSIS
EAS equipment mfrs
National Plans Development
ISP & large LAN implementation
Cellphone manufacturers
Cellphone & Pager implementation
Satellite implementation
Cable implementation
Governments implementation
Broadcasters implementation
WEAS Activity
Work Breakdown Structure
11/29/2005
IETF, SMPTE & ITU durations based on advice, others are guestimates at present

WBS WORK BREAKDOWN STRUCTURE.

PHASE 1 -- STANDARDS DEVELOPMENT AND PREPARATION.

"PPW"; The Partnership for Public Warning which developed the CAP (Common Alert Protocol) and came into existence during the development of the Emergency Alert System has been dissolved by the U.S. Department of Homeland Security. So I am using the quotes to indicate the association of people, perhaps as an ad-hoc group, which is equivalent to that organization. Although I have worked with someone who was involved with the development of EAS, this subject needs to be discussed with others with the approval of the appropriate authorities. There are a number of capabilities that were incorporated into the original design of EAS that may effectively address some of the points that I have raised. For example the ability to have a worldwide addressing scheme, and support for all languages. These capabilities are not in the present implementation.

The time to resolve these issues and prepare for later standards development is the first phase. I have noted 6 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate. The CAP protocol has been standardized by OASIS (Organization for the Advancement of Structured Information Standards). www.oasis-open.org.

IETF; The Internet Engineering Task Force is to address the internet aspects of implementation. www.ietf.org. I have asked a number of IETF people for an estimate as to how long it would take to implement this phase. As nobody was prepared to offer an estimate, I have noted 12 to 36 months as a considered reasonable time to accomplish these things. This is based on a document about preparation of RFCs for the IESG.

SMPTE; The Society of Motion Picture and Television Engineers is to address video aspects of implementation. www.smpte.org. These are important later for digital terrestrial TV broadcast, satellite broadcast and cable TV implementation. Their estimate of 18 to 30 months is what I am using.

ITU; The International Telecommunications Union can take SMPTE standards and approve them on a fast track. www.itu.int. The time of 18 months was informed to me by SMPTE. This step is important because although SMPTE is an engineering society approved by ANSI to develop standards, ITU has representatives of countries and the authority of the U.N. to influence national governments.

LEADERSHIP PROMOTION; This is the label for the activity to inform, educate and influence national governments to prepare to start their development of national plans. As nobody was prepared to offer an estimate, I have noted 12 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate.

VIDEO COMPRESSION MANUFACTURERS; While it would be more precise to implement this after the ITU approval, I have put his on some faster track after SMPTE only approval. The manufacturers can most likely incorporate any ITU developments with some relatively smaller

software amendments. While DVB-S is the most common standard for satellite TV, there are other formats to address with different manufacturers. Also while MPEG-4+H.264 is little adopted at present, this is mainly dependent on set top box replacement. That is a major expense for a DBS vendor. There does not appear to be any standard for the location and size of the EAS crawl. From a compression perspective, it would be best if it were defined as being on block boundaries as this should make overlay on decoded video simpler. Then terrestrial broadcasts should be adapted to be the same so that as DBS EAS crawls may overwrite them, they are at least the same place on the screen. As nobody was prepared to offer an estimate, I have noted 24 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate.

OS MANUFACTURERS; These are Microsoft, Apple and the UNIX and Linux vendors. Other operating systems are specialized and not used for normal internet access. Progress is dependent on completion of the IETF standard, called an RFP. As nobody was prepared to offer an estimate, I have noted 24 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate, though I am anticipating a response soon from a Linux vendor.

CELLPHONE AND PAGER STANDARDS; While much of the functionality of the CAP can be duplicated in SMS, this needs resolution. Part of a solution may be definition of CAP to SMS gateways. I have already initiated discussion with the CATS (City Alert Texting System) engineering in the U.K. Progress here is dependant on the definition of both IETF and ITU standards. As SMS can only pass messages of 150 characters or less, the long messages on EAS can have a phone number for widecasting such information as CATS uses in the U.K. This would provide for things like school snow closings. It can be paid for in cellphone minutes or a unit charge by POTS (plain old telephone service). As nobody was prepared to offer an estimate, I have noted 12 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate.

DAB, DRM, XM AND OTHER DIGITAL RADIO; This includes HD radio, Sirius and other satellite and terrestrial digital radio. The terrestrial approach is relevant to the Society of Broadcast Engineers of which I am a member. Most of the terrestrial standards development is by ETSI (European Telecommunications Standards Institute). www.etsi.org. I have already initiated discussion with the Sirius and XM radio engineers. Music and other channels from DBS vendors are not included as these should be addressed as part of the DBS system. They are actually unused audio channels of digital TV. As nobody was prepared to offer an estimate, I have noted 12 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate.

CEA; This is the Consumer Electronics Association, www.ce.org. Their standards development is focussed on the consumer electronics aspect of systems. I have noted 18 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate.

DOCSIS; This is the data over cable standard maintained by Cablelabs and is the worldwide standard for cable modems for example. www.cablelabs.org. Progress here is dependent on both the IETF RFP and the completion of video compression implementation. The implementation may bring to attention some points overlooked in the standards development. As nobody was

prepared to offer an estimate, I have noted 12 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate.

EAS EQUIPMENT MANUFACTURERS; Although EAS equipment will feed into the internet, the interface of voice and serial data is fairly straightforward to define. However the implementation of the WEAS standard by these manufacturers is dependent on the ITU standard definition. As nobody was prepared to offer an estimate, I have noted 18 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate.

NATIONAL PLANS DEVELOPMENT; This applies to countries other than the U.S., as there already is an EAS system here. As the development of national Emergency Alert System plans are not much dependent on equipment technical details, this can proceed at the same time. The biggest dependency is that of frequency allocations for the radio equipment. A skeleton plan outline can be defined and provided to national governments for them to define the details. Also appropriate legislation will need to be configured and enacted. The FCC rules regarding EAS are the best available model for this. As nobody was prepared to offer an estimate, I have noted 24 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate.

WBS WORK BREAKDOWN STRUCTURE.

PHASE 2 -- IMPLEMENTATION

Much of this phase is equipment mass production, installation and configuration.

ISP AND LARGE LAN IMPLEMENTATION; This depends on both the OS manufacturers having implemented the standard and the implementation of the National Plans in each country. This will feed EAS data and voice from the EAS receiver to a router. The routers shall be configured so that this data and voice will be broadcast to the local subscribers, not the general internet. Dedicated port numbers yet to be determined shall be used. No other traffic shall use these ports. Then users receiving this data shall broadcast it to all computers connected to the internet. With computers using the operating system updated to include this standard, users will receive the EAS messages. As nobody was prepared to offer an estimate, I have noted 24 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate.

CELLPHONE AND PAGER MANUFACTURERS; If there is some amendment to SMS, e.g. Do-Not-Disturb-Override, then the cellphone software needs updating. As nobody was prepared to offer an estimate, I have noted 12 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate.

TIME SYSTEM; The recommended time messages should be at UTC midnight, with an added offset value for local time. This offset will change and correct the clocks at the standard and daylight savings time change. The implementation of this shall be at local midnight plus two hours. As half the world has their local midnight before UTC, those countries shall broadcast a positive value offset the UTC midnight before. As there is a propagation delay through the system, the transmission time shall be prior to the real time by the average propagation time. This propagation time should be within seconds. This will serve as a satisfactory system for clock radios, VCRs, TVs, computers (locally and via NTP) and other devices where the extra expense of a GPS precision time reference is not justifiable. Any EAS messages transmitted within this time change or propagation time need to be done so allowing for these clock complications. There are some manufacturers of watches which receive WWV and WWVH for a reference. Likewise someone may make a watch which can use the WEAS time system for a reference. That would have the advantage that the offset is included, and even special transmitters can be installed at terminals so travelers' watches can be corrected by continuously transmitting UTC time and the offset, plus or minus. Such watches may also display EAS messages, and if so, have a beep when a Do-Not-Disturb-Override message is received. Other beeps are optional for the user to select. O.K. so this may have some problems at the time change, but it is a whole lot better than the present system.

CELLPHONE AND PAGER IMPLEMENTATION; This depends on both the updated cellphones and message pagers being available, and the implementation of the National Plan in each country. As nobody was prepared to offer an estimate, I have noted 24 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate. The location message method used by CATS can be implemented somewhat

independently. This is a service that is complementary to EAS as many people will desire to receive EAS messages which relate to their home or workplace when they are at some other distant location in the same country. It might be extendable internationally also. The CATS system, in my opinion, should be included in the standardization process as the recommended means of providing this additional functionality.

The widecasting technology used by BT referred to previously may be appropriate to incorporate At this time this is not adequately researched or discussed with U.S. telephone engineers. The adaption of having EAS messages overriding the dial (and possibly ringing) tones is relatively easy to implement, but the effectiveness needs research before being used widely.

SATELLITE IMPLEMENTATION; For radio, this depends on the implementation of satellite radio service providers such as Sirius and XM radio. Whether this requires upgraded receiver software for Do-Not-Disturb-Override has yet to be determined.

Terrestrial digital radio in the U.S. has barely started at this time and is called HD radio here. I did not include it as a separate item as the audio will already have EAS inserted. Newer radios should display the message on the display and shall have upgraded receiver software for Do-Not-Disturb-Override.

Satellite TV from DBS vendors such as DirecTV and Echostar are primarily using MPEG-2 set top boxes. These are not designed to accept EAS messages appropriate to their location. As MPEG-4+H.264 (also known as MPEG-4 AVC) can and VC1 promises to provide much more efficient compression, this is an incentive for such vendors to phase in these new set top boxes. This is the best time to also include the WEAS capabilities. However this is not yet standardized. As nobody was prepared to offer an estimate, I have noted 12 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate. However this means that all satellite receivers shipped will function, not that they are all replaced.

STB (CABLE SET TOP BOX) MANUFACTURERS; The upgrades of DOCSIS will need some incorporation into the design and production of set top boxes. As nobody was prepared to offer an estimate, I have noted 12 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate.

HOME THEATER; This requires interaction between different components of a home theater system to convey EAS data and audio from devices receiving them to devices reproducing audio and video. The latter devices may be reproducing a videotape or DVD. I have noted 18 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate.

CABLE IMPLEMENTATION; This is dependant on the availability of suitable STBs and on the implementation of each countries national plan. While cable systems in the U.S. use a channel switching scheme for EAS messages, this is an excessive distraction from normal programming, and the approach of video crawl with audio override as implemented by broadcasters is preferable. However as cable headends serve large areas, it would be more appropriate to have the program modification done at the set top box rather than the headend. This will be possible

with smarter digital set top boxes and I am not advocating that countries who have not yet implemented EAS do so in a less advanced technical manner. Perhaps the channel switching scheme could be reserved for older analog STBs that may remain. As nobody was prepared to offer an estimate, I have noted 24 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate.

GOVERNMENTS' IMPLEMENTATION; This applies to countries other than the U.S., as there already is an EAS system here. This is dependent on the availability of suitable EAS equipment from the manufacturers and on the completion of the national plan. While neither ISP, large LAN, cellphone/pager, cable, satellite, or broadcast implementations will actually function until this is implemented, I have not indicated this dependency as there can be test messages transmitted during this phase, and equipment testing can be done in countries where EAS is already implemented. So the approach taken here is somewhat that of fast tracking these implementations. As nobody was prepared to offer an estimate, I have noted 24 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate. While originally broadcasters were an essential part of the implementation, satellite is an alternative. So dependency on broadcasters is a decision in the national plan. If Ku band satellites are used, these are subject to rain and snow (and sandstorm?) signal loss.

BROADCASTERS' IMPLEMENTATION; This is dependant on the availability of suitable EAS equipment from the manufacturers and on the completion of the national plan. As nobody was prepared to offer an estimate, I have noted 12 months as a considered reasonable time to accomplish these things. I have had no input from others on this estimate.

PROJECT COMMUNICATIONS PLAN ----------

EXTERNAL COMMUNICATIONS

While this is a program that would affect most of the people on earth, it is impracticable to make communications regarding this project to all of them. There are a number of channels that can be managed however.

1) National Governments designated authorities. These may be the Civil Defense or Emergency Management Ministers. A number of countries have expressed some interest in this proposal already and that is a start of this process.
2) Interested parties such as religious and non-religious relief organizations. These may be part of the national or international headquarters. A number of religious and sectarian organizations have expressed some interest or support for this proposal already and that is a start of this process. This is currently described in the spreadsheet foreign-relations.XLS. Islamic religious authorities have not been communicated with at present.
3) One or more public relations companies and the communications that derives from this channel. This can include the media.
4) The media may directly seek information and disseminate it. This should be referred to the appropriate authorities in each country as much as possible
5) At the present time, major groups of people have not been communicated with. They include, but are not limited to, communist and former communist countries, African countries, Islamic countries except for Indonesia and Malaysia who were severely impacted by the tsunami, other countries not on particularly friendly terms with the U.S.

INTERNAL COMMUNICATIONS

During the development of the standards, there are a number of groups of people to co-ordinate. They include;

A) Civil Defense/Emergency Management and other technical experts. Some of these have already been reached at this initial stage.
B) Standards organizations and members. A number of these have already been reached at this initial stage. As subsequent standards development and implementation may bring to light some desirable amendments of earlier standards, this shall be implemented by using integrated change management. That is discussed in more detail elsewhere.
C) Equipment manufacturers are standards organization members, but have a crucial implementation role also. Appropriate co-ordination with them is necessary.
D) I am a member of both SMPTE and SBE (Society of Broadcast Engineering). However these both are media related societies so I have not sought any official response from them. I have had some helpful discussions however. I am also a member of the Project Management Institute, where I have been in the working group on disaster relief project management. The consideration of disaster mitigation is not proposed to begin until 2006. So to fast track this important subject I have already started with the anticipation that support, authorization and funding will eventually come about.
E) The authorization and funding organization within the U.S. government will need appropriate financial and progress reporting.

F) As the ITU is part of the U.N., this can be a communications link to the U.N. As in my previous experience I have not noted the U.N to be an effective organization in dealing with such innovative technical matters, I do not consider it important to depend on them at the present time. At some point in the future the U.N. may wish to support this program. A practical way to do so would be for staff operating internationally to do so with U.N. authorization, passports and payment of international expenses.

G) Critical information regarding the EAS system should be disclosed upon agreement to a non-disclosure agreement, and some means of tracking documents should be employed to ascertain the path of unauthorized disclosures.

PROGRAM RISK MANAGEMENT ----------

There are several major risks that can be mentioned at present;

1) There may be another major disaster approaching the scale of the Indian Ocean tsunami before this program is completed, and there will be serious dissatisfaction with the rate of progress being made. This possibility should be mentioned to the public early on and transparency should help the public trust.
2) That this program may be inadequately funded. While much of the engineering standards development needs appropriate funding, it is comparable to developing legislation and is a process that is difficult to hasten without introducing inadequacies that can be serious problems later. It should be realized that this is a really complex project that crosses a large number of organizations' responsibilities. This combined with international politics makes it in a number of ways more difficult than putting a man on the moon. At this time this program has only been personally funded. I decided against copyrighting these plans and proposal as the risk of loss of funds had to be weighed against the risk of the failure to implement this proposal.
3) That this program will not be successfully implemented. To avoid this, project risk management shall be applied. The cost to the world of this program not being successful can be more great losses of lives. So the best management methods should be applied with all stakeholders appropriately involved.
4) That this program will be excessively funded. This may be interpreted as a signal to find new and creative ways to utilize the budget. However there is no shame in not doing that and in focussing on an effective yet economical approach. Extra funds may be utilized by some states for some political purpose, but the method of doing that need not be via the program management office. Also extra funds can be considered as foreign aid to help poor countries implement their Emergency Alert System or relevant sensor systems. Another aspect of pursuing an efficient approach is that less expensive equipment will be used, which will be more economical to maintain and eventually replace. That makes maintenance funding easier. Also that applies to poorer countries especially, so an expensive solution that is affordable for the U.S. is much less likely to be affordable to the majority of the world. At the present time, the Senate is authorizing $200M. I would advance the argument that this amount of money for this purpose has not been available in the past and therefore should not be expected again in the foreseeable future, and therefore should be utilized wisely.
5) I have incorporated some aspects of fast tracking by in some cases bypassing the ITU. There is a risk to this in that there is no guarantee that the ITU will standardize the WEAS proposal without making changes that are assumed not to be made. The most significant of these is likely to be the acceptance of the national and area coding scheme developed at the beginning. This is further discussed under Execution.

PROGRAM MANAGEMENT; Because this includes multiple engineering standards to be developed, and has multiple rather independent deliverables, I am calling this a program. The Project Management Institute is currently defining the standard definition of what a program is. Many of the tasks in this program can be considered projects. An activity on node network diagram (sometimes incorrectly called a PERT chart) has been developed, but in the draft version only the minority of the

durations (as months) have been entered with relevant expert advice. Also for the standards development, an OSI 7 layer protocol diagram breakdown has been developed to explain the functional relationships of the standards to be developed. In reality some desirable changes can be realized later for otherwise previously completed tasks. Integrated change management shall handle these.

IMPLEMENTATION; It would be helpful if the project manager for this had experience in the Emergency Alert System, analog and digital PAL & NTSC television, video compression, internet, analog & digital telephony with ITU-T standard systems, product design, systems integration, fiber & satellite & microwave & copper transmission, disaster recovery, quality management, and have documentation and communications skills. This document is an introductory one, and is basically a scope statement and draft document for a full project plan. With authorization, there will be the incentive for others to respond to these planning questions and so make a more accurate and complete plan.

PROJECT FINANCE ----------

In the Senate passed recently was the Digital Television Transition and Public Safety Act. In this there are three items of interest.

1) A fund to improve the interoperability of radio and other communications systems of the official organizations responding to disasters. This amount is $1,000 M. While this is valuable, it is not expected to be applicable to this program.
2) An amount of $50 M for improved tsunami detection and alarms. As I understand it, this is an amount requested by NOAA and as the oceans of the world are vast, this may not be an adequate amount of money to provide satisfactory coverage. However it is a major improvement over the present state of affairs and more can be sought by them as it can be justified.
3) An amount of $200 M to improve the Emergency Alert System. As I hope the readers of this document are aware by now, there is a very considerable amount of work to be done to develop standards for all these systems to interoperate. Also equipment prototypes need conformance and interoperability testing. This requires testing by an independent organization and testing capability by the project management. The standards development phase and testing capability should cost less than 1% of the 200 M. If the U.S. is delivered a quite satisfactory solution as a result of the planning and standardization for an amount considerably less than $200 M, then the balance could be earmarked as applicable to foreign aid for EAS for poor countries. The application of this to all countries should be monitored for progress and effectiveness. The application of this system worldwide should result in significantly less money and aid being needed for disasters from the U.S. Countries that are not making satisfactory progress in the implementation of this system may be informed that a consequence of this may there be a reduction of foreign aid being provided by the U.S., especially for disaster relief. So the governments of these countries are ultimately accountable to their citizens for their actions. Because this will take years to implement, it would be most appropriate if the unspent portion of this funding were held in trust rather than requiring renewed funding each financial year.

   Whether the cost of the equipment is to be paid for by the owner of the facility where it is installed, or some subsidy, is not determined. With the extensions proposed, the number of ISP local offices, telco CO (central office or exchanges), cellphone message routing offices are currently unknown. This is a significant number and cost. The Federal finance should be applied to improvements in the Federal and State Emergency Management Office facilities. With the extensions proposed, there would be a significant increase in the monitoring capabilities to ensure satisfactory operation.

SYSTEM DESIGN ----------

To describe the design of the system is simplest when considered as a protocol stack. The internet operates based on the TCP/IP protocol stack. A protocol stack diagram is at WEAS-OSI.XLS, on the next page.

Gateway to >	Broadcast TV	Internet	Cable TV	Cellphone/Pager	Broadcast Radio	Broadcast radio digital	DBS TV	DBS radio	Telephones
Protocol layer					analog			or SDARS	
Application	Crawl & audio override	Crawl & audio override by OS	Crawl & audio override by STB	Text display optional audio override	Audio override	Text display audio override	Crawl & audio override by STB	Text display audio override	Dial tone override
Presentation (decryption?)	ASCII or Unicode to CG	2 IP ports	IP or PIDS	SMS gateway CATS example	Audio override	ETSI	PIDS	IP or PIDS	and ringing override. CO/CX
Session	PPW/CAP	PPW/CAP	PPW/CAP	PPW/CAP	PPW/CAP	PPW/CAP	PPW/CAP	PPW/CAP	PPW/CAP
Transport (FEC?)	SMPTE	IETF	DOCSIS	ITU/ETSI & others	ITU/EBU	DAB (DRM, HD radio)	SMPTE, other	Sirius, XM, ITU	ITU/Bellcore
Network	PPW	IETF	DOCSIS	ITU/ETSI & others	ITU/EBU	DAB (DRM, HD radio)	SMPTE, other	Sirius, XM, ITU	ITU/Bellcore
Data Link	PPW	IETF	DOCSIS	ITU/ETSI & others	ITU/EBU	DAB (DRM, HD radio)	SMPTE, other	Sirius, XM, ITU	ITU/Bellcore
Physical	PPW	IETF	DOCSIS	ITU/ETSI & others	ITU/EBU	DAB (DRM, HD radio)	SMPTE, other	Sirius, XM, ITU	ITU/Bellcore
Fire Alarm dry contact input to WEAS		Building fire alarm output NC (or NO)	Building fire alarm output NC (or NO)				Building output NC (or NO) where appropriate (hotel)		Building output NC (or NO) where appropriate. PBX

WEAS-OSI.XLS

EXECUTION ----------

As disasters are costing many lives and a lot of money, it is certainly desirable to reduce this as much as practicable. In this proposal I have incorporated some aspects of fast tracking by in some cases bypassing the ITU. There is a risk to this in that there is no guarantee that the ITU will standardize the WEAS proposal without making changes that are assumed not to be made. The most significant of these is likely to be the acceptance of the national and area coding scheme developed at the beginning. Canada and Thailand have expressed interest in implementing EAS in their countries. This means implementing country coding and then asking the ITU to accept these as part of the standard. In practice, this has probably been done before, but I cannot convey a decision of the ITU before the fact. At the most, I can ask the ITU to accept decisions made by countries already. If the ITU requests a different implementation by defining the standard differently, then that would mean implementing a software upgrade in all affected equipment at the same time.

This type of fast tracking I am calling US-EAS implementation in other countries, with adaption. If this is proceeded with by other countries, all I can do is to explain the situation as above. The benefit of this is that EAS will not only be planned for but also implemented sooner in those countries than I have noted on the activity diagram. It will be limited to being a terrestrial broadcast only solution as the U.S. presently has. However that is much better than what is presently in place. The extensions can be implemented when they are available. Such fast tracked implementations may provide disaster mitigation results to encourage other countries.

The path of Leadership Development and National Plans Development is a considerable administrative, educational, and sometimes legislative, effort. This can proceed rather independently of the standards development and should be pursued as quickly as reasonable. Then people will be better educated and Emergency Management Offices more prepared for equipment delivery. Once standards are defined and software written accordingly, electronics production lines can manufacture the world supply of equipment in a short time frame. It will take longer for suitably equipped engineers and technicians to install it. Education and legislation is important for the management of the various private businesses and corporations. If anyone questions the need for this, I suggest they read my essay "My Difficulties Implementing EAS", available on request.

CONCLUSION ----------

One hypothetical question I was asked was "Could this have helped during 9-11?". My answer was that EAS was not activated during 9-11. This may have been because New York City had to evacuate their Emergency Management Office. I was there on the ground that day and I observed many people saying that their cellphones did not work. I expect that this was primarily due to network congestion which is like a traffic jam, rather than actual damage to the cellphone network. However my proposal is that EAS messages would be delivered in a broadcast mode to everyone, rather than as point to point phone calls. So the EAS messages would still be delivered and help the emergency. One message to deliver is to request people to avoid using their phones, cellphones, and the internet unless they are making essential calls. This is to reduce network congestion.

As I do not have an analysis of the situation regarding EAS in the New Orleans flood, I cannot comment much other than to say that if there were EAS messages delivered by other means as well as terrestrial broadcasters, there may have been more people evacuated sooner. Broadcasters there were having problems also. A Spanish language broadcaster was off the air before Katrina struck, and this deprived a significant population of Spanish-only speakers from EAS messages.

This document is primarily written by Frank W. Bell and is done so without authorization or funding. So it is less than a skunk works project at present. I have however received considerable encouragement and statements of support as noted in the document WEAS responses.doc. While I have not received any funds for this, a representative of one country asked if it would be helpful if there were some funding. I said that I am not seeking any funding from another country as I am expecting that this would be resolved here. Also to do so would have made me an agent on behalf of another country, which is probably not appropriate in the future.

As this program is not even initiated yet at an official level, this document is definitely a work in progress. The planning and standards development phase are expected to result in a number of revisions, so this can be considered a work in progress. Also technology is advancing, so in a sense we have a moving target.

So far my greatest critics were Baps, the Hindu Association who refuse to discuss this subject, and a TV news network anchor who said that "That would be too logical" as a response to the Asian tsunami.

I wish to acknowledge the support of the N.Y. State Labor Department, the Passaic Workforce Development Center, Rev. Cory Hartman, a Baptist minister who was encouraging and wrote a better cover letter, Dr. Frank Kaufman, a religious consultant who sent some emails recently, and my wife Essie L. Bell and my two children.

COMMENT TO FCC ON EAS NOTICE OF PROPOSED RULEMAKING

FCC EB DOCKET 04-296

The major improvements proposed in this rulemaking is that DBS TV and Satellite Radio (SDARS) systems are expected to carry national level EAS messages, and that multilingual capabilities are recognized as desirable. There is mention of extensions in the direction that I have indicated in my proposal, but nothing concrete at this time. As channel switching is not expected of set top boxes, it appears that DirecTV and Echostar are to be keying the crawl and overriding the audio as is done by terrestrial broadcasters.

As the FCC is basically a technical regulatory government agency, this is an important legislative component to ensure that legal steps are taken. This legislation backed rulemaking can be a model for legislation to be implemented in other countries. However to pioneer the forward movement of the technology, this is rather the realm of engineering and project management.

The crucial role of the technology is not directly addressed in this document. For example video compression is mentioned once, and MPEG not at all. However to recognize that MPEG-2 does not provide any means to superimpose video such as EAS crawls and is almost the sole means of delivering DBS, is to understand the basic limitation currently to providing state and local EAS messages such as snow school closings for example. MPEG-4AVC and VC1 both promise to remove a major hurdle to this implementation. As they are also more efficient in their compression, this is an economic incentive to migrate to them for example for HDTV services. SDARS is also a compression technology for audio. The other large hurdle would be for set top boxes to monitor the EAS data and audio and key the text and override the audio when the messages are for that particular location. Mobile applications such as car radios with SDARS have an additional problem of the equipment being aware of its' location. If GPS is included in the package, that will then leave the problem of location translation as EAS does not normally include latitude, longitude and radius data. This inclusion of coordinates is a question to consider however.

At the core of the technical documentation for these new technologies are engineering standards as developed by ISO (International Standards Organization) or ANSI (American National Standards Institute) approved standards organizations. This includes the IESG (Internet Engineering Standards Group, within IETF), SMPTE (Society of Motion Picture & Television Engineers), Cablelabs, CEA (Consumer Electronics Association) and many others. However this does not include the FCC or SBE (Society of Broadcast Engineers), which together have developed EAS. So EAS is in the realm of U.S. Government specifications along with others like MIL-SPEC, except that CAP is now an OASIS standard. However is the conceptual understanding of EAS based on making a digital equivalent of the analog system? That approach is rather dated since there are now being deployed MPEG splicers, and DirecTV has just announced that in a few years they will convert their STBs to MPEG-4AVC, which can also decode MPEG-2. So now there needs to be a standard developed that is relevant in that time frame.

So the problem is that in order to accomplish the results beyond this rulemaking as is possible with standards development activity, the crucial importance of this process and the role of project/program management in the PMI (Project Management Institute, another standards organization) sense needs to be understood. This may well be understood in the FCC, but it is not obvious in the EAS NPRM.

My proposal is that the results desired by the FCC and many others for EAS can be accomplished by program managed standards development activity. In project management terms, the FCC and SBE are major stakeholders. The U.S. Government is anticipated to provide finance and political clout. In a corporate program environment, the program manager is ineffective if the management is not behind the program. The same applies here. However, as I have found, there is serious interest and support for this beyond the U.S. Government. This is noted on the page on WEAS responses. Has the FCC considered the CATS (City Alert Texting System) now being deployed in the U.K.? Are there lessons to be learned from the Japanese experience with their emergency warning system? Emergency managers in Alaska are interested in linkage with the Japanese system, but is this recognized by the FCC?

As long as there are lawyers arguing in courts there will need to be detailed legislation such as the FCC rules. However in part what is being attempted is to accomplish project management by lawyers, or at least has the appearance of this. If this is going to succeed in reaching its full potential, it can only do so by being done properly in all respects, not just some of them. The role of FCC rules is more readily accepted by others if it is perceived as that of motivating the stragglers to keep up with the herd, and reason to adequately document that the correct actions have been taken. This includes documentation of the signal path in which EAS equipment is installed, and that records are made of FCC compliance by appropriate test equipment. While chief engineers may like to have their facility drawings up to date, and appropriate test equipment available for this digital technology, the combination of frugal company ownership and power grabbing by IT management can deny them the appropriate tools. IT managers can even remove EAS from service and be unaware of the consequences of their actions.

Already there are efforts by Canada and Thailand to implement EAS. This is not mentioned. Also there are many disasters in other countries that have relief provided by the U.S. These two aspects point toward the desirability of a world system from a political perspective as well as the standards development aspect I have already pointed out. Together this goes beyond the FCC and even the U.S. Government. However there are crucial roles for both if it can be accepted that EAS can be an important contribution to world peace and security as well as that of the U.S. World peace and security centered on the U.S. will be to the advantage of U.S. security. I have seriously supported U.S. security in relation to SDI, and I have no intention of changing that with EAS.

The foreign affairs concerning the FCC are normally related to the ITU, Canada and Mexico. However there is no mention of EAS in relation to them. Major foreign disasters are of concern not only to the general public, but more specifically to the International and Foreign Relations Committees, the State Department, and on occasion the President. Whether this is a consideration within the FCC is unknown, but it is not apparent in the document. The international prestige of the U.S. is probably not a concern of the FCC. However, if this program of EAS improvements is

well implemented, there is the potential for this to have very positive foreign diplomatic benefits for the U.S. These can be of benefit in many ways, including leverage to make improvements in relation to the U.N. for example. The stakes of this are higher than most people realize.

Sincerely

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World Emergency Alert System proposed plan outline responses.

	Oppose	Disagree	Refuse to say	Appreciate or Interested	Support	Endorse
ACLC (Archbishop Stallings verbal) USA						Y
American Radio Relay League USA						Y
Assembly of God USA				Y		
Australia					Y	
Baha'i of USA					Y	
Benny Hinn Ministries USA				Y		
Bill & Melinda Gates Foundation USA (statement)					Y	
Canada						Y
Catholic, Paterson Diocese NJ					Y	
City Alert Texting System UK						Y
Congressman Joe Wilson SC					Y	
Demoss Associates (USA PR company)					Y	
Hindu Association Baps NJ			N			
International Association of Emergency Managers (verbal) USA				Y		
International Society of Krishna Consciousness USA					Y	
Orthodox Judaism USA				Y		
Papua New Guinea				Y		
Presbyterian Church USA (verbal)				Y		
Qualcomm				Y		
Red Cross USA				Y		
Senator John McCain AZ				Y		
Southern Baptist/North American Mission Board USA				Y		
Sweden				Y		
Tibetan Buddhism, His Holiness the Dalai Lama					Y	

Support means supporting the proposal goals. Endorse means endorsing the proposal technical plan. Those who have yet to respond are not listed.

Summary of responses;

Oppose	0
Disagree	0
Refuse to say	1 (counted as a no)
Appreciate or Interested	11
Support	8
Endorse technical plan	4

From;

Countries	5
Religious groups	11
Community/National/other groups	6
Congressmen or Senators	2